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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/541,354	03/31/2000	Raphael Yair	32-NM-5321	3181

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Patrick S Yoder
7915 FM 1960 West Suite 330
Houston, TX 77070

EXAMINER

FETZNER, TIFFANY A

ART UNIT

PAPER NUMBER

2862

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/541,354

Applicant(s)
Raphael Yair et al.,

Examiner
Tiffany A. Fetzner

Art Unit
2862



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 3, 2002
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-23, and 25-28 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-23, and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
(If approved, corrected drawings are required in reply to this Office action.)
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other: _____

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DETAILED Non-Final ACTION

1. The examiner notes that **claims 4 and 24 are canceled** as per applicant's April 3rd 2002 response.

Specification

2. The objection to the disclosure is rescinded in view of applicant's remarks on page 6 paragraph 1 of the April 3rd 2002 response.

Drawings

3. The objection to Figure 8 is rescinded in view of applicant's remarks on page 6 paragraph 1 of the April 3rd 2002 response.

4. The rejection of **claims 1-15, 18-19, 23-25, and 28** under **35 U.S.C. 102(e)** as being anticipated by **Souza et al.**, US patent 6,144,205 issued November 7th 2000 filed November 19th 1998; are rescinded in view of applicant's arguments on page 7 paragraph 3 through page 9, of the April 3rd 2002 response.

5. The rejection of **Claims 1-15, 18-19, 23-25, and 28** under **35 U.S.C. 103(a)** as being unpatentable over **Souza et al.**, US patent 6,144,205 issued November 7th 2000 filed November 19th 1998; are rescinded in view of applicant's arguments on page 7 paragraph 3 through page 9, of the April 3rd 2002 response.

6. The rejection of **claims 1-15, 18-19, 23-25, and 28** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Souza et al.**, US patent 6,144,205 issued November 7th 2000 filed November 19th 1998, in view of applicant's admission of what is conventionally well-known and well-established as general knowledge concerning the nature of thyristors (i.e. silicon-controlled

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rectifiers or SCRs); on page 15 lines 5-16 of applicant's disclosure are rescinded in view of applicant's arguments on page 7 paragraph 3 through page 9, of the April 3rd 2002 response.

7. The rejection of **claims 16-17, 20-22, and 26-27** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Souza et al.**, US patent 6,144,205 issued November 7th 2000 filed November 19th 1998; in view of **Vavrek et al.**, US patent 5,311,135 issued May 10th 1994 and in further view of applicant's admission of what is conventionally well-known and well-established as general knowledge concerning the nature of thyristors (i.e. silicon-controlled rectifiers or SCRs); on page 15 lines 5-16 of applicant's disclosure are rescinded in view of applicant's arguments on page 7 paragraph 3 through page 9, of the April 3rd 2002 response.

8. ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

10. **Claims 1, 2, 3, 5, 6, 10-13, 18, 23, 25 and 28** are rejected under **35 U.S.C. 102(b)** as being anticipated by **Wirth et al.**, US patent 5,270,657 issued December 14th 1993.

11. With respect to **Amended Claim 1**, **Wirth et al.**, teaches, shows, and / or suggests "A switching circuit" [See Figures 11, 12, 13 and col. 11 line 25 through col. 13 line 65] "to linearly conduct current between a source" [See col. 5 lines 10-24, where the linear gradient amplifiers of

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an MRI device components 42 of Figure 2 are taught to be a “source” of current by providing power to gradient coil 22] “and a load” [See col. 1 lines 61-62 where the gradient coils of an MRI device, components 22 of Figure 2 are taught to be substantially inductive loads.], **Wirth et al.**, teaches, shows, and / or suggests that “the circuit comprising: a switching device” [See the switching IGBT type power transistors, components 116-119, in Figures 11 and 12] “coupled between the source and the load”, [See col. 11 lines 50-63] the switching device having a conductive state in which a first portion of the current is conducted between the source and the load during a first phase of operation, the first phase of operation dependent on the magnitude of the current;”[See col. 2 lines 20-63; col. 7 line 11 through col. 10 line 16; especially col. 9 line 10 through col. 10 line 16; Figures 4, 7a, 7b, 7c, 7d, 7e and col. 11 line 25 through col. 13 line 65] “and a current steering circuit coupled between the source and the load, [See the switching network taught in col. 11 line 25 through col. 13 line 65, which includes the IGBT type power transistors components 116-119 in Figures 11 and 12; or the switching network 66 taught throughout the entirety of the reference.] **Wirth et al.**, teaches, shows, and / or suggests that “the current steering circuit having a conductive state in which a second portion of the current is conducted between the source and the load during a second phase of operation in which the magnitude of the current is below a non-zero threshold value.” [See col. 2 lines 20-63; col. 7 line 11 through col. 10 line 16; especially col. 9 line 10 through col. 10 line 16; Figures 4, 7a, 7b, 7c, 7d, 7e and col. 11 line 25 through col. 13 line 65]

12. With respect to **Amended Claim 10**, **Wirth et al.**, teaches, shows, and / or suggests “A magnetic resonance imaging. (MRI) system to perform an. MRI scan in accordance with a pulse

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sequence, the pulse sequence including at least a first pulse” [See abstract, figure 1 which shows an MRI pulse sequence; col. 1 lines 12-68; col. 2 lines 20-68; col. 4 lines 35-68; col. 5 lines 10-36]. **Wirth et al.**, also teaches, shows, and / or suggests the “the system comprising: a gradient coil assembly to generate a gradient magnetic field during the MRI scan;” [See Figure 2, col. 5 lines 10-36] “an amplifier to drive the gradient coil assembly such that the gradient coil assembly generates the gradient magnetic field in accordance with the pulse sequence” [See Figure 2 col. 2 lines 15-63; col. 5 line 10 through col. 13 line 65; and the pulse sequence shown in Figure 1];

13. The limitations of “a switch assembly to provide a conductive path between the amplifier and the gradient coil assembly, the switch assembly comprising: a first switching device having a conductive state during a first portion of the first pulse of the pulse sequence; and a second switching device coupled in parallel with the first switching device, the second switching device having a conductive state during a second portion of the first pulse of the pulse sequence during which a current from the amplifier to the gradient coil assembly is below a non-zero threshold value” are taught suggested and shown by **Wirth et al.**, for the same reasons given in the rejection of claim 1, which need not be reiterated. Additionally, **Wirth et al.**, teaches and suggests that “the conductive path is provided between the amplifier and the gradient coil assembly during substantially the entire duration of the first pulse.” [See col. 9 line 10 through col. 10 line 30; Figures 1, 2, 7a-7e; and the entire reference in general.] The same reasons for rejection, that apply to **claim 1**, also apply to **claim 10**.

14. With respect to **Amended Claim 18**, and corresponding method **claim 23**, **Wirth et al.**, suggests and shows “A magnetic resonance imaging (MRI) system for acquiring MRI data, the

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system comprising: a processor to control acquisition of the MRI data in accordance with a program stored in a memory, the program including an imaging protocol having a sequence of gradient pulses and a sequence of detection pulses” ” [See abstract, Figure 1, Figure 2; Figures 7a-7e, col. 1 lines 10-68; col. 4 line 35 through col. 5 line 9; and the entire reference in general.]

Wirth et al., also teaches, suggests and shows a gradient amplifier to drive the gradient coil assembly in accordance with the sequence of gradient pulses;] [See Figure 2] “an MRI scanner to perform an MRI scan in accordance with the stored imaging protocol”, [See Figure 2 and the entire reference in general as the **Wirth et al.**, invention is taught and described in connection with an MRI apparatus.] **Wirth et al.**, shows and suggests that “the MRI scanner comprising a magnet; a gradient coil assembly, and an RF coil assembly” [See Figure 2, col. 4 line 35 through col. 5 line 9;] **Wirth et al.**, also teaches, suggests and shows “an RF detector coupled to the RF coil to detect MRI data resulting from the MRI scan in accordance with the sequence of detection pulses” [See Figure 2, col. 4 line 35 through col. 5 line 9;]

15. The limitations of a “gradient coil assembly generating a gradient magnetic field in accordance with the sequence of pulses; a switch assembly coupled between the gradient amplifier and the gradient coil assembly to provide a conductive path therebetween, the switch assembly comprising: a first switching device having a conductive state during a first portion of a first gradient pulse; and a second switching device coupled in parallel with the first switching device, the second switching device having a conductive state during a second portion of the first gradient pulse during which a current from the amplifier to the gradient coil assembly is below a non-zero threshold value, wherein the conductive path is provided between the gradient amplifier and the

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gradient coil assembly during substantially the entire duration of the first pulse;" are taught suggested and shown by **Wirth et al.**, for the same reasons given in the rejection of claims 1, and 10, which need not be reiterated. The same reasons for rejection, that apply to **claims 1, and 10** also apply to **claim 18, and corresponding method claim 23**.

16. With respect to **Claim 2, Wirth et al.**, teaches and suggests that "the switching device" (i.e. an IGBT type device) "is in a non-conductive state during the second phase of operation." [See Figures 4, 7a-7e, 1, transistors 71-74, Figures 11, 12, 13, components 116-119; col. 7 line 19 through col. 10 line 30; Table I, col. 11 line 25 through col. 13 line 65. The examiner notes that "on" or "off" suggest conduction or non-conduction from Table 1 and as taught in the reference.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 2**.

17. With respect to **Claim 3, Wirth et al.**, teaches and suggests that "the current steering circuit" [See the switching network taught in col. 11 line 25 through col. 13 line 65, which includes the IGBT type power transistors components 116-119 in Figures 11 and 12; or the switching network 66 taught throughout the entirety of the reference.] "is in a non-conductive state during at least one phase of operation." [See Figures 4, 7a-7e, 1, transistors 71-74, Figures 11, 12, 13, components 116-119; col. 7 line 19 through col. 10 line 30; Table I, col. 11 line 25 through col. 13 line 65.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 3**.

18. With respect to **Claim 5, Wirth et al.**, teaches and suggests that "the second phase of operation occurs when the switching device transitions from the conductive state to a non-conductive state." [See Figures 7a through 7e, Table I, Figure 1, Figure 2, and the entire

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reference in general as numerous transitions from conductive to nonconductive are taught throughout the reference. Regions BC to D in Figure 7a, show and suggest the transition claimed.] The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 2** also apply to **claim 5**.

19. With respect to **Claim 6**, **Wirth et al.**, teaches and suggests that “the switching device transitions from the conductive state to a non-conductive state when the absolute value of the magnitude of the current falls below a non-zero threshold value.” [See col. 7 line 19 through col. 10 line 30; especially col. 8 line 55 through col. 9 line 23; Table I, col. 11 line 25 through col. 13 line 65.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 6**.

20. With respect to **Claim 11**, **Wirth et al.**, teaches and suggests that “the first portion of the first pulse of the pulse sequence is dependent on the magnitude of current conducted through the first switching device.” [See Figures 1, 2, 7a through 7e, col. 7 line 19 through col. 10 line 30; especially col. 8 line 55 through col. 9 line 23; Table I, col. 11 line 25 through col. 13 line 65]. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 5, 6, and 10** also apply to **claim 11**.

21. With respect to **Claim 12**, the examiner notes that this limitation is already an aspect of independent claim 10, therefore **Wirth et al.**, teaches, and suggests that “the second portion of the first pulse occurs when the magnitude of the current conducted through the first switching device reaches a non-zero threshold value”, for the same rejection reasons given in the rejection of **claim 10** that need not be reiterated. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 5, 6, 10 and 11** also apply to **claim 12**.

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22. With respect to **Claim 13**, the **Wirth et al.**, reference shows and suggests that the “first switching device and the second switching device are uni-directional current-conducting devices, each of the first and second switching devices conducting current in the same direction.[See col 11 line 25 through col. 13 line 65; Figures 11, 12, and 13 where the diodes and / or the IGBT transistors are connected in series, such that the current through either the diode components, or the transistor components, is directed in one direction.] The **Wirth et al.**, reference teaches and suggests that the conductive direction is “between the amplifier and the gradient coil assembly”, as mentioned in the rejection of **claim 10**, The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 4, 5, 6, and 10** also apply to **claim 13**.

23. With respect to **Claim 25**, This claim is just the method version of **claims 1, 5, 10, and 18** combined. Therefore, The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 4, 10, 18, and 23** also apply to **claim 24** and need not be reiterated.

24. With respect to **Claim 28**, The **Wirth et al.**, reference teaches and suggests “generating MRI data as a result of the MRI scan; and detecting the MRI data” [See col. 1 lines 12-58; col. 4 line 35 through col. 5 line 9, Figures 1, 2, 7a through 7e] The same reasons for rejection, that apply to **claims 1, 10, 18, and 23** also apply to **claim 28** and need not be reiterated.

25. ***Claim Rejections - 35 USC § 103***

26. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

27. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

28. **Claims 7, 8, 9, 14, 15, 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wirth et al.**, US patent 5,270,657 issued December 14th 1993; in view of **Mansfield et al.**, US patent 4,820,986 issued April 11th 1989.

29. With respect to **Claim 7, corresponding claim 14** which depends from **independent claim 10** and **corresponding claim 19** which depends from **independent claim 18; Wirth et al.**, lacks directly teaching that “the switching device comprises a silicon controlled rectifier (SCR).” However, **Mansfield et al.**, teaches that in an MRI apparatus with four switches that are each shunted by diodes so that current can flow in either direction through a coil depending on the setting of the switches, that the switches can be FET’s, SCR’s, bidirectional solid-state devices or bidirectional mechanical devices. [See col. 7 lines 14-20; col. 7 lines 55-60; col. 1 lines 4-30; the abstract]

30. It would have been obvious to one of ordinary skill in the art, at the time that the invention was made that the silicon controlled rectifiers (SCR)’s of **Mansfield et al.**, can be used with the split gradient amplifier of **Wirth et al.**, because the **Wirth et al.**, apparatus shows, teaches and

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suggests “four switches that are each shunted by diodes so that current can flow in either direction through a coil depending on the setting of the switches”. [See **Wirth et al.**, Figure 11, 12, col. 11 line 25 through col. 13 line 65], Therefore the substitution of the SCR switches is a modification to the **Wirth et al.**, reference which is directly suggested from the **Mansfield et al.**, reference.

The ability and motivation to combine these references comes from the fact that both references concern the ability to control the current and magnetic gradients, in NMR and MRI systems; and both references use the same basic configuration, to address and control the highly switched current required in an NMR / MRI system. The same reasons for rejection, that apply to **claims 1, 10, 18**, also apply to **claims 7, 14, 19**.

31. With respect to **Claim 8**, and **corresponding claim 15** which depends from **independent claim 10**, **Wirth et al.**, teaches and suggests that the “steering circuit comprises a transistor to conduct the current during the second phase of operation.” [See IGBT transistors 116-119 in figures 11 and 12] The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 7, 10** also apply to **claims 8, 15**.

32. With respect to **Claim 9**, **Wirth et al.**, suggests that the “switching device comprises a pair of anti-parallel” transistors [See Figures 11, 12] As was explained in the rejection of claim 7, **Mansfield et al.**, teaches and suggests the ability to substitute “silicon controlled rectifiers”, for the transistor switch components in an MRI circuit configuration such as the configuration of Figures 11 and 12 from **Wirth et al.**, [See the rejection of claim 7] Therefore, applicant’s claimed limitation is taught and suggested from the teachings of **Wirth et al.**, in combination with the

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teachings of **Mansfield et al.** The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 7** also apply to **claim 9**.

33. **Claims 16-17, 20, 22, and 26-27** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Wirth et al.**, US patent 5,270,657 issued December 14th 1993; in view of **Vavrek et al.**, US patent 5,311,135 issued May 10th 1994.

34. With respect to **Claim 16, corresponding system claim 20** which depends from **independent claim 18** and **corresponding method claim 26** which depends from **independent claim 23; Wirth et al.**, suggests and shows that “the switching assembly comprises: a third switching device coupled in parallel with the first switching device” [See Figure 13] “the third switching device having a conductive state during a first portion of a second pulse of the pulse sequence, the second pulse having a polarity opposite of the first pulse;” [See Figures 1, 7a through 7e, 13, and col. 11 line 25 through col. 13 line 65] “and a fourth switching device coupled in parallel with the third switching device, the second switching device having a conductive state during a second portion of the second pulse of the pulse sequence, such that the conductive path is provided between the amplifier and the gradient coil assembly during substantially the entire duration of the second pulse.” [See Figures 1, 7a through 7e, 13, and col. 11 line 25 through col. 13 line 65 and the rejections of claims 1, 10, 18 and 23.] Additionally **Vavrek et al.**, shows in Figures 3 and 9 an MRI gradient coil switching device circuit, that meets the criteria set forth by applicant. [See Figures 3, 9 and the teachings of the **Vavrek et al.**, references concerning Figures 3 and 9] The examiner notes that the entire **Vavrek et al.**, reference is applicable because the invention of **Vavrek et al.**, is a way to couple and decouple

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multiple MRI gradient field coils or sets of coils, which must be switched in the course of an MRI pulse sequence, and is one of applicant's main concerns. Additionally, since the **Vavrek et al.**, reference is directed toward enabling and disabling at least two sets of two gradient coils, which must be switched, and the **Wirth et al.**, reference is concerned with the effective switching, of gradient coils it would have been obvious to one of ordinary skill in the art, at the time that the invention was made, that modifying the switches of the **Vavrek et al.**, reference, to include the switches of **Wirth et al.**, is desirable because the switches of **Wirth et al.**, preserve the natural efficiency of the low voltage power supply. [See col. 12 lines 33-36] and assist in reducing and / or eliminate the potential hazard of electrical voltages and currents that arise from any source in the MRI system, and injuring a patient, which increases the safety of MRI procedures. The same reasons for rejection, that apply to **claims 1, 10, 18, 23** also apply to **claims 16, 20, and 26**.

35. With respect to **Claim 17, corresponding system claim 22** which depends from **independent claim 18** and **corresponding method claim 27** which depends from **independent method claim 23**; The **Wirth et al.**, reference lacks teaching that teaches that "the gradient coil assembly comprises a first gradient coil set, and a second gradient coil set, and that "the switch assembly selectively couples the amplifier to either the first gradient coil set or the second gradient coil set." **Wirth et al.**, teaches that each gradient amplifier is associated with a particular gradient coil. [See col. 5 lines 10-12] However, the **Vavrek et al.**, reference, suggests and shows this limitation. [See Figures 3, 9, col. 7 lines 36-64]. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 10, 16, 18, 20, 23** and **26** also apply to **claims 17, 22, and 27** and need not be reiterated.

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36. **Claim 21** is rejected under **35 U.S.C. 103(a)** as being unpatentable over **Wirth et al.**, US patent 5,270,657 issued December 14th 1993; in view of **Vavrek et al.**, US patent 5,311,135 issued May 10th 1999; and in further view of **Mansfield et al.**, US patent 4,820,986 issued April 11th 1989..

37. With respect to **Claim 21**, the **Wirth et al.**, reference and the **Vavrek et al.**, reference lack directly teaching that “the first switch device and the third switching device each comprises a silicon controlled rectifier.” However, the semi-conductor switches in the **Mansfield et al.**, reference, as taught in the rejection of **claims 7, 14, and 19**; suggest that silicon controlled rectifiers can be used for each semi-conductor switch. Therefore, it would have been obvious to one of ordinary skill in the art, at the time that the invention was made that the **Wirth et al.**, reference can be modified to enable or disable one or more gradient coils, and that each switch could comprise a silicon controlled rectifier. Therefore, the examiner considers the situation of “the first switch device and the third switching device each comprising a silicon controlled rectifier.” to be within the scope of the **Wirth et al.**, reference. The same reasons for rejection, obviousness, and motivation to combine that apply to **claims 1, 7, 10, 14, 18, 19, 20, and 23**, also apply to **claim 21**.

38. The **prior art made of record** and not relied upon is considered pertinent to applicant's disclosure.

- A) **Souza et al.**, US patent 6,144, 205 issued November 7th 2000 filed November 19th 1998.
- B) **Schweighofer** US patent 6,034,565 issued March 7th 2000 filed July 21st 1998.
- C) **Schweighofer** US patent 6,028,476 issued February 22 2000 filed July 21st 1998.

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- D) Ideler** US patent 6,031,422 issued February 29 2000 filed August 4th 1998.
- E) Schweighofer** US patent 6,163,201 issued December 19th 2000 filed March 26th 1998.


Conclusion

39. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is (703) 305-0430. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

40. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz, can be reached on (703) 305-4816. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3432 .

41. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.


TAF


EDWARD LEFKOWITZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

June 12, 2002